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(54) **An interchangeable skid blade ice skate.**

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Description

This invention relates to an ice skate with interchangeable skid blade.

More particularly, this invention concerns an ice skate of a type which includes a support wherein at least one toe sole portion and at least one heel portion are defined which are overhung from the same side thereof, and a skid blade secured to said support and extending longitudinally thereof on the opposite side from said overhung portions.

An ice skate of the above type is disclosed in US-A-4,218,069.

The technical problem that this invention is directed to solve is that of devising and providing an ice skate which is so structured as to allow prompt replacement to the skid blade with another, similar or different skid blade, easily and using no ancillary equipment or tools, thereby such an operation can be performed by the user alone, all this without affecting in any way the rigid coupling characteristics and substantially unitary construction of the support-skid blade assembly of such a skate.

This problem is solved according to the invention by an ice skate having the features pointed out in the claim 1.

The invention features and advantages will become apparent from the detailed description which follows of a preferred, but not exclusive, embodiment thereof, to be read with reference to the accompanying illustrative and non-limitative drawings.

In the drawings:

Figure 1 shows in perspective and part-section an ice skate according to the invention;

Figure 2 is a part-sectional view of a detail of Figure 1, drawn to an enlarged scale;

Figure 3 is an exploded view showing, in perspective and part-section, the same ice skate as in Figure 1; and

Figure 4 is a part-sectional view of a modified embodiment of the ice skate detail shown in Figure 2.

With reference to the drawing views, generally shown at 1 is an ice skate according to the invention and comprising a support 2 and a skid blade 3.

The support 2 is formed from a suitable plastics by conventional techniques and includes a sole portion 4 and a heel portion 5, both of hollow construction and overhung from the same side of the support.

On the opposite side from said portions 4 and 5, the support 2 is formed with a groove 7 longitudinally thereof, which has predetermined depth and width to receive a matching longitudinal portion 3a of the skid blade 3 in push fit relationship.

At the location of the sole portion 4, the groove 7 opens into a seat 6 formed in the support 1 and adapted to be engaged by a toe portion 3b of the blade 3. In particular, the length of the seat 6 is greater than that of the tip portion 3b of the blade 3, and its width is sized to be a push fit with said toe portion.

A recess 8 is formed in the bottom of the seat 6 which extends on one side of said seat longitudinally of the support 2 toward the heel portion 5 of the latter.

Advantageously, the recess 8 has a circular arc profile shape subtending a greater angle than 180 degrees, such that a lip 8a, also having a circular arc profile shape, is defined at the inlet mouth of said recess.

Formed on the tip portion 3b of the blade 3 is a dog 9 overhanging longitudinally from the blade toward the rear of the latter and having a circular arc profile shape substantially mating the profile shape of the recess 8 into which it is adapted to engage in push-fit relationship, as explained hereinafter.

The support 2 is provided, at its heel end, with a seat 10 which opens both into the groove 7 and inwardly of the hollow heel portion 5 of said support.

Said seat 10 also has a width dimension adapted to receive in push-fit relationship a trailing portion 3c of the blade 3. Defined on this trailing portion 3c is a dog 11 jutting out toward the toe portion of the blade 3 and having a semicircular profile shape.

A plate-like lever 12 is housed within the heel portion 5 of the support 2, being pivoted therein about a pivot pin 13 which is carried on said portion and extends across the seat 10. The top end of said lever 12 is journaled on a peg 14 carried on the head 15 of a screw 16 which is supported rotatably on the heel portion 5 considered. The screw 16 can be rotated by means of a knurled wheel 17 housed within the hollow portion 5 and accessible from the exterior of the latter through two windows 18 which are formed through the juxtaposed walls of said portion 5. Advantageously, the wheel 17 has a diameter dimension whereby it will protrude through said windows 18 and a thickness dimension whereby it bears substantially on the juxtaposed sides of each of said windows 18.

In the other end of the plate-like lever 12, there is formed laterally a recess 19 of circular profile shape having such a diameter dimension as to engage with the dog 11 of the trailing or heel portion 3c of the blade 3.

A blade 3 is fitted to the support 2 as follows.

By manipulating the screw 16, the sheet-like lever 12 is moved angularly to a rest position

shown in phantom lines in Figure 2.

The blade 3 is push fitted into the groove 7, being careful to avoid interference of the dog 9 of the toe portion 3b with the lip 8a of the recess 8. The inward movement of the blade 3 stops on the toe 3b and heel 3c portions thereof contacting the bottoms of the respective seats 6, 10.

The skid blade 3 is acted upon so as to move it lengthwise and rearwards relatively to the support 13, that is toward the heel portion 5 of said support. This movement will be resisted at first by the slight interference of the dog 9 with the lip 8a of the recess 8. Following substantially elastic deformation of the lip 8a, the dog 9 will then engage the recess 8 into a bayonet-type coupling.

After this engagement is accomplished, the plate-like lever 12 is driven angularly about its respective pivot point 13 by operation of the wheel 17, the lever movement continuing until the recess 19 becomes fully engaged with the dog 11 on the heel or trailing portion 3c of the blade 3. The screw 16 rotation should be continued as far as possible, such that the screw forms a detent for locking the lever 12 and, at the same time, provides a useful constraint for the bayonet coupling 8-9. The coupling of the blade 3 with the support 2 is an extremely rigid one, forming an essentially unitary support/blade assembly.

For quick removal of the blade, one would proceed as follows. By operation of the wheel 17, the plate-like lever 12 is disengaged from the dog 11 on the heel portion 3c of the blade 3. Thereafter, the skid blade is pushed forward (such as by striking on the rear thereof) so as to disengage the elements 8-9 of the bayonet coupling, thereby the blade 3 can be drawn out by applying a small force from the corresponding groove 7 in the support 2.

The support is now ready to receive a fresh blade 3 or a different blade, on condition that it be provided with a forward dog 9 and rearward dog 11, at appropriate locations to engage in the recess 8 of the support 2 and with the plate-like lever 12, respectively.

In Figure 4, there is shown a modified embodiment of the means for operating the plate-like lever 12.

In this variation, the top or upper portion of the lever 12 is formed with an essentially rectangular recess 20 which is engaged by a nut 21 threaded onto a screw 22 which is supported rotatably on the heel portion 5 of the support 2. The screw 22 has opposed ends provided with respective heads 23 and 24. The head 23 provides a detent for the screw 22 setting, and the head 24, to be accessible from the exterior of the portion 5, may be of the Allen type for engagement by a suitable tool.

Advantageously, in order to enhance the unitary nature of the support 2-blade 3 coupling, the

blade is provided with a lug 25 at a central location thereon which juts outwards and is adapted to engage in a seat correspondingly formed in the support 2 and opening into the groove 7. This seat 26 has a suitable depth and such a width as to accommodate the lug 25 in push-fit relationship.

Advantageously, the seat 26 could be formed with a recess quite similar to the previously described recess 8 in connection with the seat 6 and adapted to engage with a dog formed on the lug 25, quite in the same manner as the dog 9 formed on the toe portion 3b of the skid blade 3.

The ability to quickly exchange the skid blade of an ice skate according to the invention, which exchange can be effected by the skate user him/herself, constitutes a major advantage afforded by this invention. And this becomes apparent when it is considered that the intervals for such exchange may be quite frequent, such as to have the skid blade sharpened. This advantage is further enhanced by that, again through simple operations to be performed by the user, the coupling of the blade to the support positively provides a substantially unitary assembly which can successfully withstand the considerably high stresses to which the assembly is subjected during the practice of the sport.

Another non-negligible advantage is that the exchange can be performed quickly without the footwear having to be removed from the respective support.

As a result, where the user is equipped with one or more pairs of sharpened blades, the skid blades could be replaced on several occasions in one day.

A further non-negligible advantage is that a skid blade may be replaced with another having different characteristics, thereby the skater may be offered a pair of ice skate with the option of a set of blades, one (or more) for each of the sport specialties of interest, such as blades for figure, speed, hockey playing, etc.

The invention as described may be variously altered by the skilled one without departing from its protection scope as set forth in the appended claims. Thus, as an example, the dog 9 and corresponding recess 8, which constitute the locking means of the bayonet coupling type, could be arranged to point toward the toe end of the blade 3 and the support 2, rather than the heel end thereof; further, the dog 19 could also be arranged to face outwards from the blade 3 and for engagement in a corresponding recess formed in the lever 12 on the side of the latter facing the center of the support 2. More variations may be made to the design of the means for operating the lever 12.

Claims

1. An ice skat with interchangeable skid blade, being of a type which comprises a support (2) on which there are defined at least one toe sole portion (4) and at least one heel portion (5) which are overhung from the same side thereof, and a skid blade (3) secured to said support (2) and extending longitudinally thereof on an opposite side from said overhung portions (4 and 5), the support (2) including at least one seat (6,7,10) for receiving a corresponding portion (3a,3b,3c) of said skid blade (3) in push-fit coupling, means (8,9) being arranged to lock said coupling in substantially bayonet-like form, and means (12 to 19) for preventing release of said locking means (8,9) being disposed in the heel portion (5) of the said support (2) and actuable from an exterior thereof, characterized in that said means of preventing release of the locking means (8,9) comprises a plate-like lever (12) journaled on a pivot pin (13) carried across said heel portion (5), said lever having one end acted upon by a screw (16) accessible from the exterior of said heel portion (5) and the other end (19) contoured to engage with a corresponding dog (11) formed on a trailing portion (3c) of said skid blade (3).
2. An ice skate according to Claim 1, characterized in that the substantially bayonet-like locking means comprises a recess (8) formed in said seat (6) longitudinally of the support (2) and a dog (9) overhung from said skid blade (3) and lying longitudinally thereof and being adapted to engage slidably in said recess (8), said recess (8) having a circular arc profile shape subtending a greater angle than 180 degrees to form a lip (8a) at the inlet thereof, said lip being deformed elastically as said dog (9) is bayonet fitted into said recess (8).
3. An ice skate according to Claim 2, wherein said recess (8) and said dog (9) are arranged to point rearwards.

Patentansprüche

1. Schlittschuh mit einer auswechselbaren Kufe des Types, der einen Träger (2) aufweist, an dem mindestens ein vorderer Sohlenteil (4) und mindestens ein Fersenteil (5) vorgesehen sind, die nach derselben Seite abkragen und bei dem eine Kufe (3) an dem Träger (2) in dessen Längsrichtung an der entgegengesetzten Seite von den abkragenden Teilen (4 und 5) angebracht ist, wobei der Träger (2) minde-

stens einen Sitz (6, 7, 10) zur Aufnahme eines korrespondierenden Teiles (3a, 3b, 3c) der Kufe (3) mit einer Einschiebekupplung aufweist und wobei Mittel (8, 9) im wesentlichen in bajonettartiger Ausbildung vorgesehen sind, um diese Kupplung zu sichern sowie Mittel (12 bis 19), um ein Lösen der Sicherungsmittel (8, 9) im Fersenteil (5) des Trägers (2) zu verhindern, die von der Außenseite betätigbar sind, dadurch gekennzeichnet, daß diese Mittel zum Verhindern des LöSENS der Sicherungsmittel (8, 9) aus einem plattenähnlichen Hebel (12) bestehen, der an einem sich quer zum Fersenteil (5) erstreckenden Schwenkstift (13) pendelnd angebracht ist und ein Ende besitzt, auf das eine von außerhalb des Fersenteiles (5) zugängliche Schraube (16) einwirkt und dessen anderes Ende (19) so ausgebildet ist, daß es mit einer entsprechend ausgebildeten Klaue (11) am hinteren Ende (3c) der Kufe (3) in Eingriff kommt.

2. Schlittschuh nach Anspruch 1, dadurch gekennzeichnet, daß die im wesentlichen bajonettähnlichen Sicherungsmittel aus einer Ausnehmung (8) bestehen, die in Längsrichtung des Trägers (2) in dem Sitz (6) ausgebildet ist und daß eine Klaue (9) von der Kufe (3) absteht, die in Längsrichtung dazu liegt und geeignet ist, gleitend in der Ausnehmung (8) aufgenommen zu werden, wobei diese Ausnehmung (8) eine kreisbogenförmige Profilform aufweist, die einen Winkel größer als 180° überstreicht, um eine Lippe (8a) am Eingang zu bilden, die elastisch verformt wird, wenn die Klaue (9) bajonettartig in die Ausnehmung (8) eingesetzt ist.
3. Schlittschuh nach Anspruch 2, bei der die Ausnehmung (8) und die Klaue (9) jeweils nach hinten zeigen.

Revendications

1. Patin à lame interchangeable du type comprenant un support (2) sur lequel sont définies au moins une partie de bout de pied (4) et au moins une partie de talon (5) suspendues à partir du même côté et une lame de patin (3) fixée audit support (2) et s'étendant longitudinalement sur un côté opposé à partir desdites parties suspendues (4 et 5), le support (2) comprenant au moins un siège (6, 7, 10) pour recevoir une partie correspondante (3a, 3b, 3c) de ladite lame de patin (3) par un accouplement par poussée, des moyens (8, 9) étant prévus pour bloquer ledit accouplement sous une forme pratiquement en bajonnette et des

moyens (12 à 19) pour empêcher une libération desdits moyens de blocage (8, 9) placés dans la partie de talon (5) dudit support (2) et actionnables de l'extérieur,

patin caractérisé en ce que lesdits moyens 5
pour empêcher une libération des moyens de
blocage (8, 9) comprennent un levier en forme
de plaque (12) monté tournant sur un doigt de
pivotement (13) porté en travers de ladite partie 10
de talon (5), ledit levier présentant une
extrémité soumise à une vis (16) accessible de
l'extérieur de ladite partie de talon (5) et l'autre
extrémité (19) conformée pour coopérer avec
un taquet correspondant (11) formé sur une 15
partie arrière (3c) de ladite lame de patin (3).

2. Patin selon la revendication 1, caractérisé en 20
ce que lesdits moyens de blocage pratiquement par baïonnette comprennent un creux (8)
formé dans ledit siège (6) longitudinalement au
support (2) et un taquet (9) suspendu à partir
de ladite lame de patin (3) et s'étendant longitudinalement, prévu pour coopérer par coulis-
sement avec ledit creux (8), ledit creux (8) 25
présentant une forme de profil en arc circulaire
sous-tendant un angle supérieur à 180° pour
former une lèvre (8a) sur son entrée, ladite
lèvre étant élastiquement déformée tandis que
ledit taquet (9) est adapté par baïonnette dans 30
ledit creux (8).
3. Patin selon la revendication 2, dans lequel ledit 35
creux (8) et ledit taquet (9) sont dirigés vers
l'arrière.

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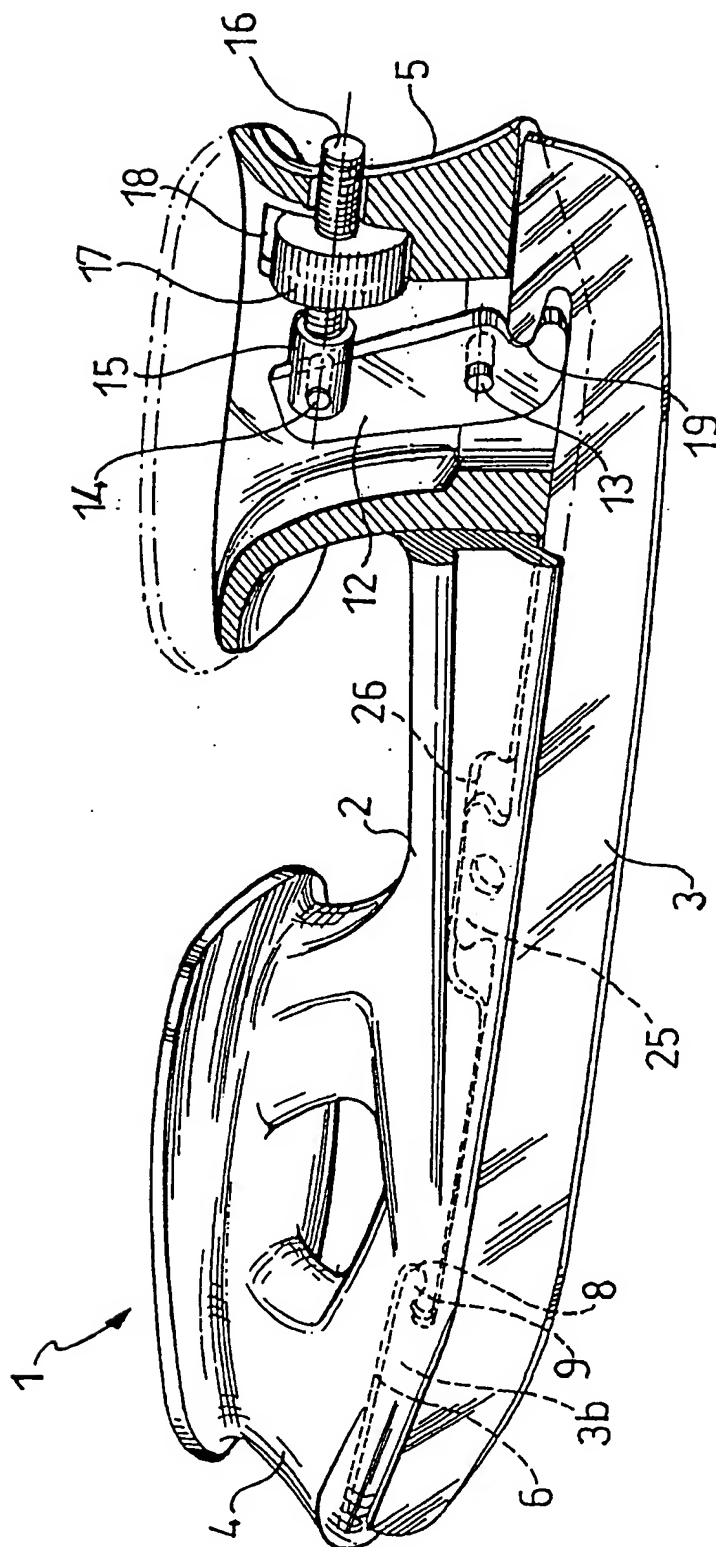
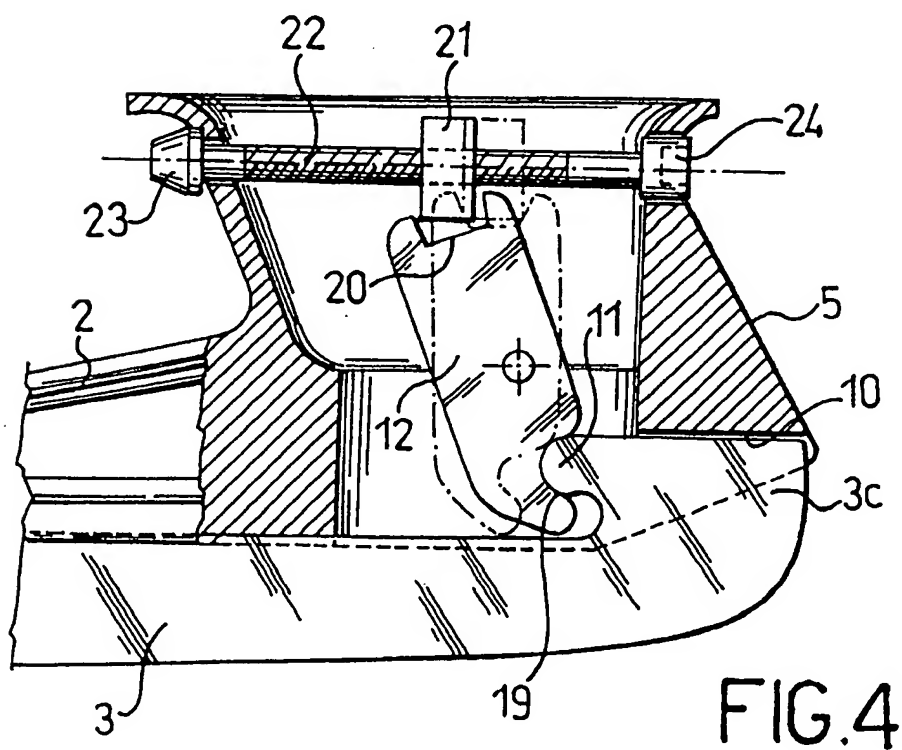
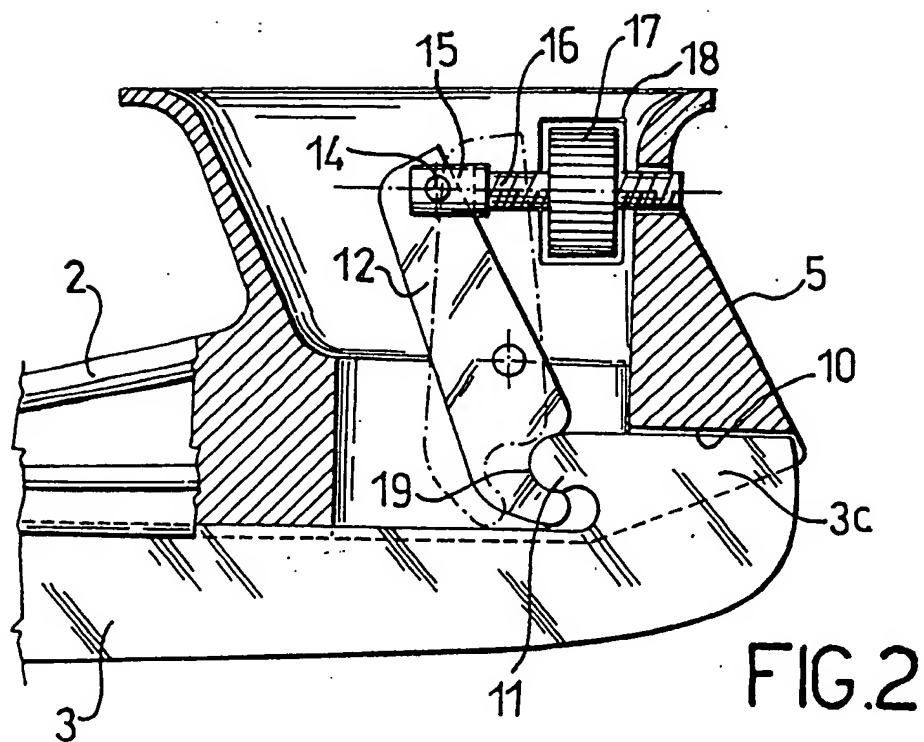


FIG. 1



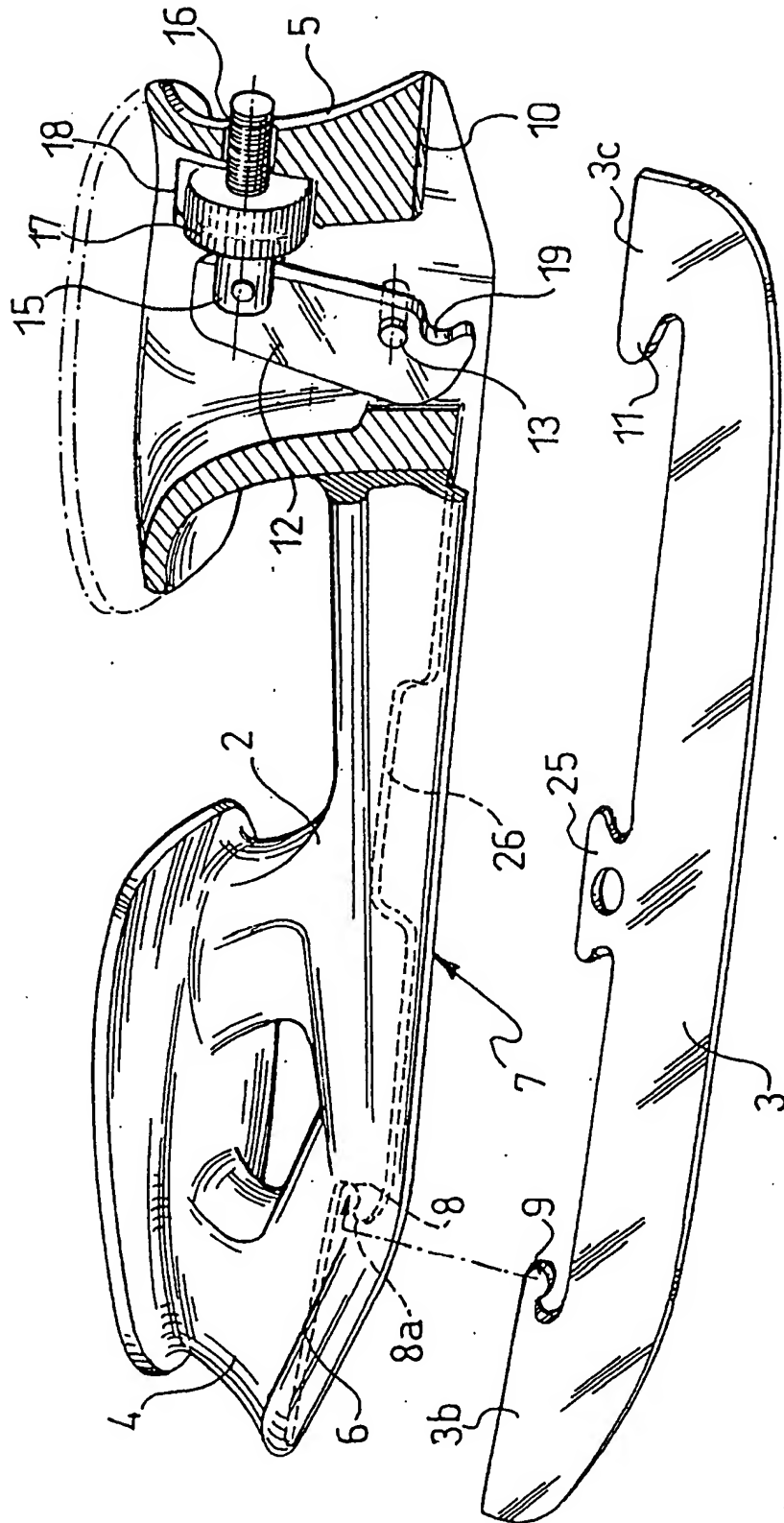


FIG. 3